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EXAMINER	
MULL, FRED H	

ART UNIT	PAPER NUMBER
3662	

DATE MAILED: 02/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/635,011	GABRIEL ET AL.	
	Examiner	Art Unit	
	Fred H. Mull	3662	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *2/3, 7/8, 10/13, 12/7, and 12/14/2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8, 11-28, 30-31* is/are rejected.

7)☒ Claim(s) *9,10 and 29* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *all 5 IDSs*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities:

It is standard US practice to include section headings such as "Background of the Invention" and "Summary of the Invention", and "Brief Description of the Drawings" in the specification.

The abstract of the disclosure is objected to because, rather than ending with a period, it ends with ", [sic]". Correction is required. See MPEP § 608.01(b).

Appropriate correction is required.

Claim Objections

2. Claim(s) 7 is/are objected to under 37 CFR 1.75.

In line 2, a comma should be added after "columns".

3. Claim(s) 15 is/are objected to under 37 CFR 1.75.

In line 2, "the" should be replaced by --a--, as there is not antecedent basis for "the dual-polarized antenna".

4. Claim(s) 23 is/are objected to under 37 CFR 1.75.

In line 7, the phrase "preferably" renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d). The examiner will assume this limitation does not appear in order to further examine the claim.

In lines 4-6, it is unclear whether the downstream network goes with either the phase adjusting device or the phase shifter adjusting device, or only with the phase shifter adjusting device.

In lines 5-6, the relationship between the output signal and the two inputs is unclear.

The examiner would like to suggest the following claim language, upon which he will base further examination of this claim:

Claim 23: Method for operating an antenna arrangement comprising:

varying an input signal via (i) either a phase adjusting device or a phase shifter adjusting device and (ii) a downstream network, such that the signals at the output of the network ~~and thus at the at least two inputs is~~ are either in phase or ~~is~~ are not in phase, ~~preferably with a 180° phase shift,~~ where the signals are input into antenna element systems to provide a horizontal radiation pattern corresponding to a horizontal polar diagram, which is at least one of:

(a) asymmetric,

(b) symmetrical and has at least two main lobes which are symmetrical with respect to a vertical plane at right angles to ~~the~~ a reflector plane, and/or

(c) as at least three main lobes or an odd number of main lobes, whose maximum intensities differ from one another by less than 50%.

5. Claim(s) 31 is/are objected to under 37 CFR 1.75.

In line 2, "the" should be deleted, as there is not antecedent basis for "the hybrid".

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claim 11 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The specification fails to disclose antenna elements which are arranged in one column are adjusted such that their main lobes are aligned parallel to one another, and in that antenna elements which are provided and are offset with respect to one another in the horizontal direction are adjusted such that their main lobes are arranged such that they run parallel or run such that they are not parallel.

7. Claim 25 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The specification fails to disclose a transmission horizontal polar diagram which overlaps a reception horizontal polar diagram, with the transmission horizontal polar diagram having a surface area with a lower power density.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claim 11 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

It is unclear what having multiple main lobes being parallel in the horizontal direction (i.e. in azimuth as shown in Fig. 6) means. Wouldn't that just make one big main lobe?

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claims 1, 3-8, 14-15, 19, 22-23, and 27 are rejected under 35 U.S.C. 102(e) as being anticipated by Izzat.

In regard to claim 1, Izzat discloses at least two antenna element systems each having at least one antenna element (2, 3, Fig. 1; see also Figs. 3, 6, etc.); said elements being arranged to be offset with respect to one another, at least in the horizontal direction (they are offset in the horizontal direction), the at least two antenna element systems transmitting and receiving at least in one common polarization plane (¶ 4, ¶ 36, where each of the elements can be used for both reception and transmission), a network, via which the at least two antenna element systems can be supplied with signals with an intensity or amplitude which can be adjusted relative to one another (1); the network having a phase adjusting device (14) connected to receive an input signal (15), said input signal being split into two output signals (12, 13) with the same intensities but with a different phase angles (¶ 22, lines 10-17); and a hybrid circuit (6), via which the output signals are converted to hybrid output signals (7, 8) which are at relatively fixed predetermined phase angles with respect to one another and whose amplitudes differ from one another as a function of the different phase angles in the phase adjusting device (¶ 23).

In regard to claim 3, the phase adjusting device can be set so the hybrid output signals have the same phase angle (Fig. 2; ¶ 24, where the phase adjusting device is adjustable continuously (as contrasted to discretely) and passes through the zero relative phase position).

In regard to claim 4, Izzat further discloses an additional phase adjusting element (31, Fig. 3), which varies the phase angle, is provided between at least one output of

the hybrid circuit (the lower output) and at least one input of the antenna system (the input to the leftmost antenna).

In regard to claim 5, Izzat further discloses the phase adjusting element comprises a differential phase shifter (¶ 25).

In regard to claim 6, Izzat further discloses the at least two antenna systems have antenna elements which are arranged with a horizontal lateral offset with respect to one another (Figs. 1, 3, and 6).

In regard to claim 7, Izzat further discloses at least two antenna columns, the antenna elements of one antenna system being provided in one column (53, Fig. 6), and the antenna elements of the further antenna system being provided in the other column (54).

In regard to claim 8, Izzat further discloses the hybrid circuit is formed from a 90 degree hybrid (¶ 22).

In regard to claim 14, Izzat further discloses at least two antenna elements are provided and transmit and receive partially in one polarization and partially in a second polarization plane, which is at right angles to the first polarization (¶ 36).

In regard to claim 15, Izzat further discloses dual-polarized antenna elements are aligned at +45 and -45 degrees to the horizontal (¶ 36).

In regard to claim 19, Izzat further discloses the connecting line between the outputs of the network is in the form of a hybrid circuit (6, Fig. 1) and at least some of the inputs of the antenna arrangement are of different lengths (7 to 3, 8 and 11 to 2).

In regard to claim 22, Izzat further discloses that the beam shape is adjusted variably (¶ 36).

In regard to claim 23, Izzat discloses an antenna arrangement (Fig. 10) where varying an input signal via (i) either a phase adjusting device or a phase shifter adjusting device (14, Fig. 1) and (ii) a downstream network (6), such that the signals at the output of the network are either in phase or are not in phase (Fig. 2, where, depending on the setting of the phase shifter, the signals will be either in phase or not in phase), where the signals are input into antenna element systems to provide a horizontal radiation pattern corresponding to a horizontal polar diagram (2, 3), which is:

asymmetric (Fig. 9), and

has at least three main lobes, whose maximum intensities differ from one another by less than 50% (Fig. 9).

In regard to claim 27, Izzat further discloses subjecting the signal which is supplied to the antenna to an additional phase shift, at least upstream of one input (31, Fig. 3).

10. Claims 2, 23-24, and 26 are rejected under 35 U.S.C. 102 (a) and (e) as being anticipated by Shapira.

In regard to claim 2, Shapira discloses

at least two antenna element systems each being at least one antenna element arranged offset with respect to one another, at least in the horizontal direction (385A, 385 E, Fig. 3C; 510, Fig. 5A);

the at least two antenna element systems transmitting and receiving at least one common polarization plane (¶ 67, lines 4-10; Fig. 2B);

a network via which the at least two antenna element systems can be supplied with a signal with an intensity or amplitude which can be adjusted relative to one another (¶ 70);

the at least one network being arranged such that a different beam shape is used for receiving signals as compared to transmitting signals (¶ 65, lines 13-15).

In regard to claim 23, Shapira discloses an antenna arrangement (385A, 385 E, Fig. 3C; 510, Fig. 5A) where varying an input signal via (i) either a phase adjusting device or a phase shifter adjusting device (540) and (ii) a downstream network (520), such that the signals at the output of the network are either in phase or are not in phase (depending on the setting of the phase shifters, the signals will be either in phase or not in phase), where the signals are input into antenna element systems to provide a horizontal radiation pattern corresponding to a horizontal polar diagram, which is:

asymmetric (Fig. 5B), and

has at least three main lobes, whose maximum intensities differ from one another by less than 50% (Fig. 5B).

In regard to claim 24, Shapira further discloses an antenna arrangement is used which has at least two antenna element systems, which each have at least one antenna element (385A, 385 E, Fig. 3C; 510, Fig. 5A), the at least two antenna element systems transmit and receive in at least one common polarization plane (¶ 67, lines 4-10; Fig.

2B), and producing a different beam shape or a different horizontal polar diagram for receiving signals and for transmitting signals (¶ 65, lines 13-15).

In regard to claim 26, Shapira further discloses 1 network which has a receiving network and a transmitting network for setting a horizontal polar diagram which is different for transmission and reception (¶ 65, lines 13-15).

11. Claims 1, 19, 23, and 27-28 are rejected under 35 U.S.C. 102(e) as being anticipated by Rhodes.

In regard to claim 1, Rhodes discloses at least two antenna element systems each having at least one antenna element (Fig. 2); said elements being arranged to be offset with respect to one another, at least in the horizontal direction (they are offset in the horizontal direction), the at least two antenna element systems transmitting and receiving at least in one common polarization plane (¶ 87, 99), a network, via which the at least two antenna element systems can be supplied with signals with an intensity or amplitude which can be adjusted relative to one another (¶ 14); the network having a phase adjusting device (71) connected to receive an input signal (72, Fig. 2A), said input signal being split into two output signals (74, 75) with the same intensities but with a different phase angles (¶ 83, lines 3-6); and a hybrid circuit (76), via which the output signals are converted to hybrid output signals (77, 78) which are at relatively fixed predetermined phase angles with respect to one another and whose amplitudes differ from one another as a function of the different phase angles in the phase adjusting device (¶ 83, lines 8-14).

In regard to claim 19, Rhodes further discloses the connecting line between the outputs of the network is in the form of a hybrid circuit (74, 75) and at least some of the inputs of the antenna arrangement are of different lengths (79).

In regard to claim 23, Rhodes discloses an antenna arrangement (Fig. 2) where varying an input signal via (i) either a phase adjusting device or a phase shifter adjusting device (71) and (ii) a downstream network (74-78, Fig. 2A), such that the signals at the output of the network are either in phase or are not in phase (depending on the setting of the phase shifter 79, the signals will be either in phase or not in phase), where the signals are input into antenna element systems to provide a horizontal radiation pattern corresponding to a horizontal polar diagram, which is:

asymmetric (Fig. 31), and

has at least three main lobes, whose maximum intensities differ from one another by less than 50% (Fig. 31).

In regard to claim 27, Rhodes further discloses subjecting the signal which is supplied to the antenna to an additional phase shift, at least upstream of one input (79, Fig. 2A; 8, 9, Fig. 2).

In regard to claim 28, Rhodes further discloses using at least four hybrid circuits via which a four-column antenna array is fed (Fig. 8, where each of 54, 55, and 56 each contain two hybrids (i.e. each contains a device show in Fig. 2A), and thus provide sis hybrids, and 44-47 provide four columns).

12. Claims 23 and 31 are rejected under 35 U.S.C. 102 (b) as being anticipated by IDS document Itoh (US 4,612,547 A).

In regard to claim 23, Itoh discloses an antenna arrangement (Fig. 10A) where varying an input signal via (i) either a phase adjusting device or a phase shifter adjusting device (112) and (ii) a downstream network (113), such that the signals at the output of the network are either in phase or are not in phase (depending on the setting of the phase shifters, the signals will be either in phase or not in phase), where the signals are input into antenna element systems to provide a horizontal radiation pattern corresponding to a horizontal polar diagram, which is asymmetric (Figs. 12A-C, 13A-C, 15; col. 12, lines 5-8).

In regard to claim 31, Itoh further discloses hybrid output signals that are phase shifter by 180 degrees (109).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

13. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rhodes in further view of Kraus.

Rhodes discloses his antenna elements may be dipole antennas (¶ 99).

Kraus discloses the use of a reflector with dipole antennas a reflector increases the directivity of the beam (p. 64, Fig. 3-7), eliminates backward radiation from the antenna (p. 347, ¶ 1), and yields a substantial signal gain in the forward direction (p. 347, ¶ 2).

It would have been obvious to include a director in the antenna system of Rhodes in order to allow greater control of antenna directivity and gain.

14. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Izzat in further view of Chadwick.

Izzat discloses his antenna elements may be the antenna elements described in Chadwick (¶ 36).

Chadwick discloses the use of a reflector with his antenna elements (10, Fig. 1; p. 6, 2nd ¶).

It would have been obvious to include the antenna elements in Chadwick as the antenna elements of Izzat based on Izzat's suggestion to do so.

15. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rhodes.

While Rhodes discloses dual polarization antenna elements (¶ 99, lines 1-3), he also explicitly discloses that other radiating elements may be used if appropriate for other applications (¶ 99, lines 3-4). The use of antenna elements with a single polarization is known in the art. It would have been obvious to use these antenna elements where conventional, based on the teaching of Rhodes.

16. Claims 13 and 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Izzat.

In regard to claim 13, Izzat discloses that his antenna elements "may" be dual polarization antenna elements (¶ 36). Thus, other types of antenna elements may be used. The use of antenna elements with a single polarization is known in the art. It would have been obvious to use these antenna elements where conventional, based on the teaching of Izzat.

In regard to claim 16, Izzat discloses that his invention is applicable to a wide range of wireless communications network protocols or frequency bands, including but not limited to cellular, PCS and UMTS (¶ 38). It is well known that some wireless communication networks operate in a single frequency band. It would have been obvious to use the antenna system of Izzat in known wireless communication networks such as single frequency wireless communication networks.

In regard to claim 17, Izzat discloses that his invention is applicable to a wide range of wireless communications network protocols or frequency bands, including but not limited to cellular, PCS and UMTS (¶ 38). It is well known that some wireless communication networks operate in a multiple frequency bands. It would have been obvious to use the antenna system of Izzat in known wireless communication networks such as multiple frequency wireless communication networks.

In regard to claim 16, Izzat discloses wherein antenna elements . , . are provided which transmit and receive in only one frequency band.

17. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Izzat in further view of Fenwick.

Fenwick discloses the connecting lines between the outputs of a hybrid circuit and the inputs of an antenna arrangement can be interchanged to produce different horizontal polar diagrams (col. 6, lines 1-6).

It would have been obvious to include this feature into the invention of Izzat in order to increase the versatility of Izzat's system.

18. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rhodes in further view of Fenwick.

Fenwick discloses the connecting lines between the outputs of a hybrid circuit and the inputs of an antenna arrangement can be interchanged to produce different horizontal polar diagrams (col. 6, lines 1-6).

It would have been obvious to include this feature into the invention of Rhodes in order to increase the versatility of Rhodes' system.

19. Claims 20-21 rejected under 35 U.S.C. 103(a) as being unpatentable over Izzat in further view of Shapira.

In regard to claim 21, Shapira discloses the network has a receiving path and a transmitting path with at least one receiving network and one transmitting network, via which different horizontal polar diagrams are produced for transmitting and receiving (¶ 65, lines 13-15).

It would have been obvious to include this feature into the invention of Izzat in order to increase the versatility of Izzat's system.

In regard to claim 21, Shapira further discloses a receiving amplifier (312, Fig. 3A) in the receive path and a transmitting amplifier (302) in the transmitting path.

20. Claims 20-21 rejected under 35 U.S.C. 103(a) as being unpatentable over Rhodes in further view of Shapira.

In regard to claim 21, Shapira discloses the network has a receiving path and a transmitting path with at least one receiving network and one transmitting network, via which different horizontal polar diagrams are produced for transmitting and receiving (¶ 65, lines 13-15).

It would have been obvious to include this feature into the invention of Rhodes in order to increase the versatility of Rhodes' system.

In regard to claim 21, Shapira further discloses a receiving amplifier (312, Fig. 3A) in the receive path and a transmitting amplifier (302) in the transmitting path.

21. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shapira in further view of IDS document Gottl (WO 01/13459 A1).

Shapira discloses an antenna system (Fig. 5A) with four conventional phase shifters (540).

Gottl discloses an improved phase shifter for high-frequencies that can provide four phase shift outputs (Fig. 2; abstract).

It would have been obvious to replace the conventional phase shifters of Shapira with the improved phase shifter of Gottl when the antenna system of Shapira is applied to high-frequency communication systems.

22. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shapira in further view of Gottl (US 6850130 B1).

Shapira discloses an antenna system (Fig. 5A) with four conventional phase shifters (540).

Gottl discloses an improved phase shifter "which has a simpler design and, particularly in the case of an antenna array using at least four radiating elements, allows an improvement to the control and setting of the phases of the individual radiating elements" (col. 2, lines 42-45), "which is compact and, has a higher integration density" (col. 2, line 51), and in which "additional connection lines, solder points and transformation means for providing the power sharing are minimized" (col. 2, lines 52-54).

It would have been obvious to replace the conventional phase shifters of Shapira with the improved phase shifter of Gottl in order to achieve the improvements in control, simplicity, and compactness taught by Gottl.

It would have been obvious to replace the conventional phase shifters of Shapira with the improved phase shifter of Gottl when the antenna system of Shapira is applied to high-frequency communication systems.

23. The examiner also finds the following reference(s) relevant:

IDS document Roederer (US 5,115,248 A) (Figs. 4A, 4B, and 27B), Shoki (Figs. 2 and 6-9), and Lalezari (Figs. 5C, 12, and 15), which teaches systems similar to that of applicant's invention.

Mailloux, which discloses a phase shifter output signal split into four signals (35, Fig. 1) and a structure similar to a Butler matrix (84, 88, 94, 100, Fig. 5).

Jones (col. 8, lines 12-40), Fox (col. 6, lines 61-74), and Erickson (col. 6, lines 26-30), which disclose the connecting lines between the outputs of a hybrid circuit and the inputs of an antenna arrangement can be interchanged.

Applicant is encouraged to consider these documents in formulating their response (if one is required) to this action, in order to expedite prosecution of this application.

Allowable Subject Matter

24. Claim(s) 9-10 and 29 is/are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fred H. Mull whose telephone number is 703-305-1250. The examiner can normally be reached on M-F 9:00 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas H. Tarcza can be reached on 703-360-4171. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Effective approximately April 2005, the following new telephone numbers will be in effect: Fred H. Mull: 571-272-6975, Thomas H. Tarcza: 571-272-6979.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Fred H. Mull
Examiner
Art Unit 3662

fhm

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